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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,031	06/07/2006	Karl Malcolm	02911.007800.	4013

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EXAMINER	
AL-AWADI, DANAH J	

ART UNIT	PAPER NUMBER
1615	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/564,031	MALCOLM ET AL.	
	Examiner	Art Unit	
	DANAH AL-AWADI	1615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 April 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,6-16 and 19-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3, 6-16, 19-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Receipt is acknowledged of Applicant's amendments and remarks filed 03/30/2010. The Examiner acknowledges the following:

Claims 19-24 are new.

Claims 1 has been amended.

Claims 1, 3, 6-16, 19-24 currently represent all pending claims under examination.

INFORMATION DISCLOSURE STATEMENT

No new Information Disclosure Statement (IDS) has been submitted for review.

WITHDRAWN REJECTIONS

Rejections not reiterated from previous Office Actions are hereby withdrawn. The following rejections are either reiterated or newly applied. They constitute the complete set presently being applied to the instant application.

RESPONSE TO ARGUMENTS

Applicant's arguments are moot in view of a new grounds of rejection.

NEW REJECTIONS

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject

matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 3, 6-16, 19-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zaffaroni US Patent 3, 993,072, Chappaz et al. US Patent 2, 962, 023, and Saleh et al. US Patent 5, 972, 372.

With respect to claim 1, Zaffaroni discloses in Example 1, an implant device comprising at least one reservoir, the at least one reservoir containing at least one pharmacologically active agent (progesterone) or a prodrug thereof, dispersed in a hydrophobic elastomeric polymer (polydimethylsiloxane), and a porous sheath (wall) that surrounds the at least one reservoir,

wherein the implant device is an intravaginal drug delivery device for administration into a vaginal environment (Examples 16 and 18; col. 23, lines 37-38; col. 24, lines 17-20). Zaffaroni further discloses the pore structure of the sheath (wall) further includes continuous pores, wherein a pore has an opening on both faces of the sheath connected therethrough thereby forming continuous diffusional paths (col. 10, lines 39-49). Therefore, the sheath is considered to discontinuously surround the at least one reservoir so as to define at least one hole or opening, the at least one hole or opening extending through the sheath to the at least one reservoir, so that, in use, at least part of the at least one reservoir is directly exposed to the vaginal environment.

Zaffaroni does not explicitly disclose that the hole or opening has a diameter range of 0.5 to 6.5 mm and that the total surface area of the reservoir exposed to the vaginal environment through the one or more holes or openings, when in use, is in a range of 1 to 750mm 2, however Zaffaroni does teach that the rate of passage of drug through the media in the microporous wall material is generally dependent, in the case of diffusion, on the solubility of the drug in the media, as well as on the diffusion coefficient and on the size of the pores and the porosity and tortuosity of the material. Furthermore, Zaffaroni teaches that the pore structure can be substantially cylindrical. It would have been prima facie obvious to one of ordinary skill in the art to optimize the diameter of the hole or opening. One would have been motivated to do so because Zaffaroni teaches that the rate of passage of drug through the media in the microporous wall is dependent on the size of the pores (Col. 8. lines 55-63 and Col. 9 lines 31-36).

Although there is not an explicit teaching of the holes or openings having a diameter of 0.5 to 6.5mm, Chappaz et al. discloses in Fig. 2, a cylindrical intravaginal drug delivery device for use in a vaginal cavity, having at least one hole or opening at each of the terminal ends and

additional holes or openings provided extending substantially radially through the sheath (10). Chappaz et al. teaches the diffusion rate and the amount of drug that is to be dispensed from the reservoir is dependent on the number of holes in the sheath (col. 1, lines 36-42). Chappaz et al. discloses in Figs. 1, an intravaginal drug delivery device having a plurality of holes that are substantially cylindrical (round hole which inherently has a depth through a sheath). Chappaz et al. further teaches the holes are 1/32 inch in diameter, therefore is within the claimed diameter range (col. 4, lines 5-8).

It would have been obvious to one of ordinary skill in the art to modify the shape and size of the at least one hole or opening in order to further modify the desired diffusion rate of the drug from the reservoir, or to further modify the amount of drug to be dispensed. Further, a change in size and shape is generally recognized as being within the level of one of ordinary skill in the art. *In re Rose*, 105 USPQ 237(CCPA 1955); *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966)

Furthermore, regarding the limitation(s) "wherein each hole or opening is substantially cylindrical with a diameter in the range of about 0.5 to 6.5mm and the total surface area of the reservoir exposed to the vaginal environment through the one ore more holes or openings, when in use, is in a range of 1 to 750 mm^2"; absent evidence of criticality, since the vales of each parameter with respect to the claimed composition are adjustable, it would have been prima facie obvious for a person having ordinary skill in the art to routinely optimize the amount of each parameter in the composition and adjust the diameter ranges and surface area of the reservoir.

Saleh et al. is relied upon to teach a polymer impregnated with drug that goes inside the outer sheath with holes. Saleh et al. discloses a vaginal ring containing a reservoir containing at

least one pharmacologically active agent or prodrug thereof, dispersed in a hydrophobic elastomeric polymer (abstract, Fig. 4A-C and 5, col. 6, lines 46-57, Examples 2-7).

Saleh et al. demonstrates the hydrophobic elastomeric polymer as being polydimethylsiloxane (Examples 2-7).

It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to modify the vaginal ring with holes as taught by Zaffaroni to include the core with the polymer and drug impregnated within the polymer that goes into the outer sheath with holes. One would have been motivated to do so in order to modify the diffusion rate of the drug from the reservoir as taught by Saleh et al. (col. 1 lines 35-42).

Additionally, it would have been obvious to one of ordinary skill in the art to modify the total surface area of the reservoir exposed to the vaginal environment through the one or more holes or openings, for the same purpose (i.e. in order to further modify the desired diffusion rate of the drug from the reservoir as taught by Saleh et al. (col. 1 lines 35-42)).

With respect to claim 3, Zaffaroni discloses the at least one hole or opening is on both faces of the sheath (wall) and is connected therethrough, therefore is considered to extend to the surface of the at least one reservoir and/or extends partially into the at least one reservoir (col. 10, lines 39-42).

With respect to claim 6, Zaffaroni discloses the continuous pores, such as straight continuous pores, has the at least one hole or opening is on both faces of the sheath (wall) and is connected therethrough and forms a diffusional path for passage through the sheath (col. 10, lines 39-49), therefore is considered to extend through the sheath substantially normal to the

reservoir surface. The examiner interprets the continuous pores to be openings extending through the sheath (wall) to at least one reservoir.

With respect to claim 7, Zaffaroni discloses in Fig. 8, the device is a ring that is substantially circular in transverse cross-section, and the sheath has a multiple micropores formed with continuous diffusional paths through the sheath (col. 24, lines 20-22). Zaffaroni further describes the pore structure of the sheath having continuous pores, where each pore has an opening on both faces of the sheath (wall) and is connected therethrough (col. 10, lines 39-42). Therefore, the examiner interprets the at least one hole (continuous pore/continuous diffusional path) extends substantially radially through the sheath at the inner circumference of the ring or at the outer circumference of the ring.

With respect to claim 8, Zaffaroni addresses all the limitations of claim 7, and further discloses multiple pores formed with continuous diffusional paths (continuous pores with openings) along the inner or outer circumference of the intravaginal drug delivery device (col. 24, lines 17-23).

However, Zaffaroni fails to expressly disclose the exact number of holes or openings. Zaffaroni further teaches the porosity affects the diffusion rate of the drug through the media in the wall (col. 9, lines 31-36).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the number of holes or openings in the inner or outer circumference of the intravaginal drug delivery device in order to attain the desired diffusion rate.

With respect to claim 13, Zaffaroni discloses in Example 18, the device is a ring (toroid shape).

With respect to claim 16, Zaffaroni doesn't disclose that the sheath comprises at least one additional pharmacologically active agent, however Saleh et al. discloses a sheath that comprises at least one additionally pharmacologically active agent (col. 6 lines 33-36; col 7 lines 42-46).

It would have been prima facie obvious to one of ordinary skill in the art to further have the sheath comprise one additional active agent to obtain additional release of a drug.

With regards to the limitations "wherein the sheath is impermeable to the at least one pharmaceutically active agent or the prodrug thereof and wherein the at least one pharmaceutically active agent tor prodrug thereof is released from the hydrophobic elastomeric polymer of the at least one reservoir through the surface area of the reservoir that is exposed to the vaginal environment", Zaffaroni discloses a sheath (wall) that is impermeable to the drug. Furthermore, it is obvious that the sheath would be impermeable to the drug to provide for controlled release. Furthermore, the combination of Zaffaroni and Saleh would provide for the drug released from the hydrophilic elastomeric polymer as taught by Saleh.

With regards to new pending claim 19, Zaffaroni teaches delivery of drugs in the order of micrograms which would be a certain dosage of milligrams per day (Examples 1 and 15).

With regards to the new limitation that the drug delivery device is capable of delivering relatively hydrophilic and/or relatively large molecular size/volume/weight drugs at a pharmaceutically suitable rate, Zaffaroni teaches delivery of progesterone which is hydrophilic.

Regarding new claims 22-24, these do not add any other structural limitations but are merely methods of delivering large molecular size/volume/weight drugs at a pharmaceutically suitable rate from and intravaginal drug delivery device comprising administering the drug

delivery device into a vaginal environment. The drug delivery device has been obviated by the combination of Zaffaroni, Saleh, and Chappaz as discussed supra and the device is administered to a vaginal environment.

CORRESPONDENCE

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Danah Al-awadi whose telephone number is (571) 270-7668. The examiner can normally be reached on 9:00 am - 6:00 pm; M-F (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert A. Wax can be reached on (571) 272-0623. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DA/
Examiner, Art Unit 1615

/Robert A. Wax/
Supervisory Patent Examiner
Art Unit 1615